

REMARKS/ARGUMENTS

Reconsideration of this application is requested. Claims 41 to 67 and 76 to 78 are under active examination.

Correction of the Record

Applicant has noted a typographical error in published application no. US 2008/0017382. The second sentence of paragraph [0005] of the published document refers to “*suitable Theological properties*”. Please correct this reference to “*suitable rheological properties*”, as recited in the original international application published as WO 2005/095755.

Information Disclosure Statement

2&3. Applicant is grateful to Examiner for drawing attention to the content of the information disclosure statement filed on January 3, 2011. Applicant’s intention was to notify the US patent 7,431,088, the content of which was discussed in Applicant’s Amendment also dated January 3, 2011. Accordingly, a new information disclosure statement directed to that document is being filed herewith.

The new information disclosure statement additionally refers to a series of mutually related US patents and patent applications, which came to Applicant’s attention when a Canadian counterpart application thereto was cited against Applicant’s corresponding, co-pending Canadian patent application in an Examination Report that issued on August 15, 2011. The other family member contained in this series is US 7,080,688 (“Todd”), which Applicant notified to the US PTO in an information disclosure statement dated June 18, 2009 and whose content Applicant discussed in detail in the Amendment filed on July 23, 2009.

It has come to Applicant’s attention that the newly notified documents in this patent family contain disclosure that is related to, but is distinct from, the disclosure contained in the previously considered document US 7,080,688. Accordingly, Applicant has carefully considered the disclosure contained in these further documents.

Applicant notes that US 2005/0034868 teaches the use of orthoesters, including poly(orthoesters), in a method of degrading an acid-soluble portion of a filter cake. However, US 2005/0034868 does not teach or suggest that a poly(orthoester), if chosen as the orthoester component, should be presented in a solid form, i.e. as a solid polymer as required by the present invention. It is noted that poly(orthoesters) can be liquids. Furthermore, at paragraph [0016] of

US 2005/0034868 there is a reference to the “*low flash points*” of some orthoesters. Since flash point is a concept associated with flammable liquids, this implies that the inventors of US 2005/0034868 were contemplating making use of liquid orthoesters. There is no disclosure anywhere in US 2005/0034868 of a solid orthoester.

There is also no teaching or suggestion in US 2005/0034868 of dispersing a solid polymer in a treatment fluid, as required in the present invention. By contrast, US 2005/0034868 teaches providing the orthoester composition in “*solution form, a gel form, or an emulsion form*” (paragraph [0019]). In an alternative embodiment of US 2005/0034868, the orthoester composition is instead coated or impregnated onto a particulate rather than being dispersed in a treatment fluid (paragraph [0021]). This alternative embodiment is said to be advantageous when the orthoester composition is a relatively solid material at ambient temperatures (paragraph [0024] of US 2005/0034868). It will be appreciated that this procedure of coating the orthoester composition onto particulates is analogous to the teaching contained in US 7,080,688 (“Todd”; see comments presented in the Amendment dated July 23, 2009).

The remaining documents in the patent family containing US 2005/0034868 and US 7,080,688 are believed to be of no greater relevance and generally less relevance than are these documents. Briefly, US 6,488,091, US 2004/018943, US 2003/114539 and US 2005/137094 do not relate at all to filter cake disruption, nor to the use of dispersed solid polymers. US 2005/034865 and US 2005034861 relate to “coated particulate” methods for disrupting filter cakes of the type described in US 7,080,688. US 2005/045328 and US 2006/283597 relate to the use of orthoester compositions for disrupting filter cakes as discussed in US 2005/0034868. Finally, US 2004/214724 relates to methods for reducing the viscosity of subterranean, viscous, cross-linked servicing fluids and not to filter cake disruption.

Applicant therefore submits that the subject-matter claimed in this application is patentable over all of the documents contained in the present information disclosure statement.

Response to Claim Rejection - 35 USC § 112

4&5. Examiner rejected claim 50 on the basis that the term “other configuration” rendered it indefinite. Applicant has amended claim 50 in order to remove the reference to “other configuration” and therefore this rejection is moot.

Response to Claim Rejection - 35 USC § 103

6&7. Examiner has rejected claims 41-67 and 76-78 as being unpatentable over Constien (US 2002/0142919, newly cited in the current Action) in view of Cooke, JR (“Cooke”; US 2004/0231845).

Examiner argued that Constien teaches a method in which a solid polymer is coated onto a piece of underground equipment, the equipment is placed into a well and the solid polymer hydrolyzes to release acid that dissolves filter cake. It was acknowledged that Constien fails to teach a method in which solid polymer is dispersed in a treatment fluid and is then introduced into a wellbore and used to disrupt a filter cake. However, Examiner argued that it would be obvious to instead disperse the solid polymer in a treatment fluid and to use such a treatment fluid to disrupt a filter cake based on the teaching in Cooke.

In response, Applicant maintains that neither Constien nor Cooke teaches or suggests the fundamental concept of using a treatment fluid containing dispersed solid polymer for disrupting a filter cake in an underground formation.

Invention not obvious from Constien

Constien does not teach or suggest the fundamental concept of the present invention. As acknowledged by Examiner, Constien relates to solid coatings on underground equipment, which degrade *in situ* to disrupt filter cake. More specifically, the coatings of Constien contain both a “binder” and a “reactive material”. The binder melts or dissolves in situ, thereby releasing reactive material. The reactive material may be a substance that hydrolyzes to produce acid, e.g. polyglycolic acid.

This system taught in Constien is clearly very different from that claimed in the present application, whereby a solid polymer dispersed in a treatment fluid is introduced into the wellbore. Dispersing material into a fluid would be expected necessarily to result in the material having different properties from when that same material is coated onto a piece of underground equipment as part of a binder/reactive material mixture. One obvious reason for that is that the surface area of material dispersed in a fluid will be far higher than the surface area of material amassed as a coating layer on a surface, which in turn would be expected to lead to very different hydrolysis rates, and so on. Another reason is that material dispersed directly into treatment fluid as in the present invention is immediately accessible for reaction, whereas “reactive

material” mixed in with binder as taught in Constien only becomes available for reaction once the binder has “melted or dissolved” *in situ*.

Accordingly, one of ordinary skill the art would not have been motivated to replace the solid coating taught by Constien by a treatment fluid containing dispersed solid polymer. Put another way, there would have been no reasonable expectation that the treatment fluid containing dispersed solid polymer would behave in an analogous manner with respect to filter cake disruption as would the binder/reactive material coated-underground equipment of Constien. Constien thus does not render obvious the method of the present invention.

Invention not obvious from Cooke

Contrary to Examiner’s reasoning, Cooke does not remedy these fundamental deficiencies in the teaching of Constien. That is because there is no teaching or suggestion in Cooke, either, that solid polymer dispersed in a treatment fluid might be suitable for disrupting a filter cake in an underground formation.

As noted by Examiner, Cooke teaches two alternative embodiments (see, for example, paragraph [0012] of Cooke). In one “viscosified fluid” embodiment, Cooke teaches the use of a degradable polymer to viscosify fluids used in wellbore operations. In another “solid coating” embodiment, Cooke teaches the use of solid polymers, for example as coatings, which degrade *in situ*.

The “solid coating” embodiment of Cooke has some similarities to the methods described in Constien, in that it involves making coatings that protect underground equipment during placement. As with Constien, though, there is no suggestion in Cooke that a coating consisting of acid-generating solid polymer might be suitable for disrupting filter cake. Instead, in Cooke it is taught that if it is desired for the protective coating to have an additional functionality of being able to “*react with potentially plugging materials in the near wellbore area*” then it is essential to add one or more additional additives of the type disclosed in Constien (see paragraphs [0026] and [0029] of Cooke).

Thus, this “solid coating” embodiment of Cooke can be read together with the teaching provided already in Constien. There is no teaching or suggestion here that solid polymer dispersed in treatment fluid would be suitable for disrupting filter cake.

Examiner made reference to the fact that Cooke teaches that the solid polymers described therein can be used in both a “solid coating” embodiment and in an alternative “viscosified fluid” embodiment. However, Cooke does not teach or suggest that, should the solid polymers be used to create viscosified fluids, then those fluids would be suitable for disruption of filter cake.

In more detail, in the “viscosified fluids” embodiment of Cooke it is taught (see paragraph [0022]) that the polymer is dissolved in an aqueous liquid prior to being introduced into the wellbore. The only functionality Cooke suggests in relation to the viscous fluid is the viscosity of the fluid itself. Cooke indicates a number of potential applications for the “viscosified fluid” embodiment, all of which are based on the principle that hydrolysis of the solid polymer will desirably decrease the viscosity of the fluid over time (see paragraphs [0011] and [0022]). Disruption of a filter cake is not one of the embodiments contemplated. There is simply no suggestion in Cooke that dispersed solid polymer would be well suited for disrupting filter cake.

Accordingly, and contrary to Examiner’s suggestion, there would be no motivation for one of ordinary skill in the art to introduce a viscosified fluid of the type described in Cooke into a wellbore containing a filter cake, with the aim of thereby disrupting said filter cake.

Summary

In view of the above comments, it can be seen that neither Constien nor Cooke provides one of ordinary skill in the art with the motivation to disperse solid polymer in a treatment fluid and introduce this into a wellbore with the aim of disrupting filter cake. There is no indication from either of these documents that such a procedure would be capable of successfully disrupting filter cake.

Consequently, the combination of Constien and Cooke necessarily also cannot make it obvious to carry out such a method.

It is therefore respectfully requested that the claim rejections under this heading be withdrawn.

Favorable reconsideration and withdrawal of the outstanding objections and rejections is believed to be in order and is respectfully requested.

All outstanding issues have been addressed and this application is in condition for allowance. Should any minor issues remain outstanding, the Examiner should contact the

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October 13, 2011

undersigned at the telephone number listed below so they can be resolved expeditiously without need of a further written action.

The Commissioner is hereby authorized to charge any deficiency, or credit any overpayment, in the fee(s) filed, or asserted to be filed, or which should have been filed herewith (or with any paper hereafter filed in this application by this firm) to our Deposit Account No. 14-1140.

Respectfully submitted,

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